

What we claim is;

1. a flow controlling apparatus to control flow rate of working fluid discharged from pump apparatus to a power steering apparatus comprising;  
a electric variable throttle;  
a solenoid mechanism for varying opening degree of the electric variable throttle based on a electric signal from a electric controller; and  
a spool which slides in accordance with the differential pressure of the variable throttle due to increase of flow rate of working fluid discharged from pump apparatus so as to return excess working fluid to a bypass passage connecting to a suction port of the pump apparatus; wherein  
the flow controlling apparatus comprising means for increasing flow rate of bypass flow to the bypass passage when rotating speed of the pump apparatus exceeds predetermined value.
2. a flow controlling apparatus according to claim 1, wherein the means for increase flow rate of bypass flow to the bypass passage is in the form of an electric controller for controlling the solenoid mechanism to narrow down opening degree of the electric variable throttle in accordance with the increase of the rotating speed of the pump apparatus when rotating speed of the pump apparatus exceed predetermined value.
3. a flow controlling apparatus according to claim 2, wherein the electric controller controls the solenoid mechanism based on vehicle state.
4. a flow controlling apparatus according to claim 1, wherein the means for increase flow rate of bypass flow to the bypass passage is in the form of a mechanical variable throttle disposed at upstream of the electric variable throttle so as to narrow down opening degree of the mechanical variable throttle in accordance with the increase of rotating speed of the pump apparatus.
5. a flow controlling apparatus according to claim 4, wherein the flow controlling apparatus further comprising the electric controller for controlling the solenoid mechanism based on vehicle state.

6. a flow controlling apparatus according to claim 4, wherein the mechanical variable throttle comprising;
- a movable rod disposed on the spool head of the spool, formed in rod-shape and integrally movable with the spool; wherein
  - opening degree of the mechanical variable throttle is controlled by the operation of the movable rod.
7. a flow controlling apparatus to control flow rate of working fluid discharged from pump apparatus to a power steering apparatus comprising;
- various type of sensors for detecting vehicle state;
  - a electric controller generating a electric signal based on vehicle state detected by sensors;
  - a electric variable throttle;
  - a solenoid mechanism for varying opening degree of the electric variable throttle based on the electric signal from the electric controller; and
  - a spool which slides in accordance with the differential pressure of the variable throttle due to increase of flow rate of working fluid discharged from pump apparatus so as to return excess working fluid to a bypass passage connecting to a suction port of the pump apparatus; wherein electric controller controls the solenoid mechanism in accordance with vehicle state; and
  - a flow controlling apparatus further comprising a sensor for detecting rotating speed of the pump apparatus and the electric controller controls the solenoid mechanism so as to narrow down opening degree of electric variable throttle in accordance with the increase of the rotating speed of the pump apparatus when rotating speed of the pump apparatus exceed predetermined value.
8. a flow controlling apparatus to control flow rate of working fluid discharged from pump apparatus to a power steering apparatus comprising;
- various type of sensors for detecting vehicle state;
  - a electric controller generating a electric signal based on vehicle state detected by sensors;
  - a electric variable throttle;
  - a solenoid mechanism for varying opening degree of the electric variable throttle based on the electric signal from the electric controller; and
  - a spool which slides in accordance with the differential pressure

of the variable throttle due to increase of flow rate of working fluid discharged from pump apparatus so as to return excess working fluid to a bypass passage connecting to a suction port of the pump apparatus; wherein electric controller controls the solenoid mechanism in accordance with vehicle state; and

a flow controlling apparatus further comprising a mechanical variable throttle disposed at up stream of the electric variable throttle so as to narrow down opening degree of the mechanical variable throttle in accordance with the increase of rotating speed of the pump apparatus.